TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE WYOMING SOIL CONSERVATION SERVICE

Biology No. 226 January 1986

Subject: WESTERN GREBE*

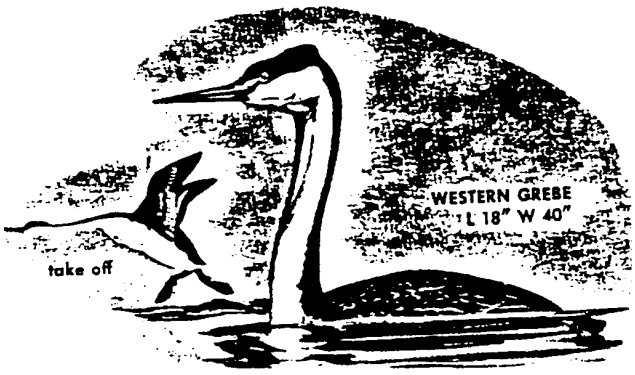
General

The western grebe (Aechmophorus occidentalis) "breeds from southeastern Alaska, south-central British Columbia, central Alberta, central Saskatchewan, and southwestern Manitoba south to southern California, north-central Utah, southwestern Colorado, southwestern and northeastern New Mexico, western Nebraska, northwestern Iowa, and western Minnesota; and locally in Mexico from Chihuahua and Durango south to northern Guerrero, Puebla and San Luis Potosi,"

Food Requirements

The western grebe is primarily a fisheating bird. The grebe apparently uses its rapierlike bill to pierce its largest prey. Fish constituted most of the stomach contents of birds collected in California, Oregon, Utah, and British Columbia. Chubs (Mylocheilus spp.; Leuciscus spp.), carp (Cyprinus spp.), suckers (Catostomus spp.), and smelt (Atherinopsis spp.) were the predominant fish identified.

Insects constituted 17 percent and fish fragments 81 percent of the total food volume in the stomachs of western grebes collected on Clear Lake in Lake County, California. Aquatic insects comprised from 32 percent of the diet in May to 8 percent of the diet in September.



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*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1984.

Water Requirements
The western grebe is dependent upon an aquatic environment that satisfies its psychological requirements for water.

Cover Requirements
The western grebe uses marshes, lakes, and bays while on summer range and sheltered seacoasts while migrating and overwintering. The grebe uses persistent emergent vegetation such as bulrushes (Scirpus spp.), cattails (Typha spp.), reed (Phragmites communis), and extensive rafts of floating vegetation, such as Potomageton spp., as protective cover on both winter and summer ranges. These cover types also provide nesting cover on suitable summer ranges.

Reproductive Requirements
The western grebe in North Dakota usually nests only on lakes and ponds that are 20 ha (50 acres) or more in area. Extensive beds of persistent emergent vegetation at edges of ponds or lakes provide favorable nesting sites and attract the largest nesting colonies of western grebes. Nest platforms are frequently located in and attached to persistent emergent vegetation. Large colonies of western grebes historically have occurred where islands of persistent emergent vegetation were interspersed with channels of open water. For example, the grebe formerly occurred in large colonies on bodies of water like lower Klamath Lake which was described by one researcher as a body of water 40 km (25 mi) long and 16 to 19 km (10 to 12 mi) wide. Extensive beds of persistent emergent vegetation bordered the lake and extended out for miles. Floating nests of western grebes attached to the emergent vegetation were found every few feet within this herbaceous wetland.

Most colonies of western grebes within the Delta Marsh, Manitoba, were located within small coves and channels and along northern shorelines that provide wavebreaks from prevailing winds. Nest platforms were supported by the densest clump of persistent emergent vegetation available and water depths under the nest platforms averaged 41 cm (16 inches) with a minimal depth of at least 25 to 30 cm (10 to 12 inches). The density of stems on one side of the nest was minimal so the grebe could dive to and from the nest platform.

Nests built early in the spring before extensive regrowth of persistent emergent vegetation has occurred may be constructed from mounds of bulrush protruding 15 cm (6 inches) above the water surface. Platform nests are usually constructed later in the year after extensive regrowth of emergent vegetation has occurred.

The maintenance of a stable water depth of about 30 cm (12 inches) in the persistent emergent vegetation areas of the marsh during April through July is critical to nesting success. It is assumed that drawdowns in water levels during the nesting season are deleterious to grebes because they tend to isolate the grebes from their nests. No nesting occurred on reservoirs in northern Colorado that failed to reach capacity and flood the protective cover along shorelines.

The quantity and quality of available nesting habitat may be increased during periods of high water because areas of cattails and phragmites become flooded and therefore useable as nesting habitat for the western grebe. Reductions in the water levels may force the grebe to use other vegetation as nest substrates. For example, nest platforms have been found attached to small rose (Rosa spp.) and willow (Salix spp.) bushes standing in shallow water. Nests also have been reported in forbs and brush near shore, in a half-submerged mix of Kochia spp. and cocklebur (Xanithium spp.) 30 m (100 ft) from shore, in a small decadent stand of bulrushes, and in an open growth of half-submerged tamarisk (Tamarix spp.) bushes. One researcher also found nests positioned at the edge of a dense growth of willows.

About 40 percent of the nests observed at the Bear River Migratory Bird Refuge in Utah were open water nests. Nests were constructed from pondweed (Potomageton spp.) in areas where no persistent emergent vegetation occurred. These floating pondweed nests extended 30 cm (12 inches) below the surface to 10 cm (4 inches) above the surface. Floating raft nests were held together by the dense entangled pondweed.

The western grebe is not considered to be a species that nests away from water. The western grebe does nest on channel banks immediately adjacent to water-filled channels that allow the bird to swim directly to or from the nest site. One study found that 5 percent of the nests of western grebes on the Bear River Migratory Bird Refuge were channel bank nests.

Interspersion Requirements

The literature implies that the western grebe, in its breeding range, requires an interspersion of persistent emergent vegetation in sheltered coves or bays, shallow water suitable for the establishment of floating nests, and large areas of open water that support a suitable prey population and allow the bird to dive and successfully catch fish.